

ABSTRACT

A multi-functional flow control valve for a water treatment system includes a valve body having a water inlet port, a water outlet port and an effluent outlet. A valve core connected with a valve rod is placed inside the valve body. The valve body defines a flow channel therein for connecting with an inside and an outside of a filter element of the water treatment system, respectively. The valve core includes a moving valve disk and a fixed valve disk whose head faces are aligned hermetically rotationally. The moving valve disk is connected to the valve rod. The fixed valve disk defines a plurality of through holes which are connected to the water inlet port, the water outlet port and the effluent outlet, respectively. The moving valve disk defines a through hole and two blind recesses therein. By rotating the moving valve disk, the through hole and the blind recesses in the moving valve disk are aligned to corresponding holes in the fixed valve disk for forming different liquid flow channels thereby to realize control of a flow. The through hole and the blind recesses in the moving valve disk and the plurality of through holes in the fixed valve disk are allocated on the same turning circle. This invention realizes different controlled cycles of softening, purification, backwash and regeneration by changing the different aligning positions of the holes and the blind recesses in the moving and the fixed valve disks. Thus designed, the valve features easy operation and a compact structure, applicability for various industrial water treatment systems as well as household water treatment systems and improved quality of water treatment.